

## ABSTRACT OF THE DISCLOSURE

A method is provided to deposit niobium monoxide gates. An elemental metal target, or a composite niobium monoxide target is provided within a sputtering chamber. A substrate with gate dielectric, for example silicon dioxide or a high-k gate dielectric, is provided in the sputtering chamber. The sputtering power and oxygen partial pressure within the chamber is set to deposit a film comprising niobium monoxide, without excess amounts of elemental niobium,  $\text{NbO}_2$  insulator, or  $\text{Nb}_2\text{O}_5$  insulator. The deposition method may be incorporated into a standard CMOS fabrication process, or a replacement gate CMOS process.